

HiPerFET™

Power MOSFETs

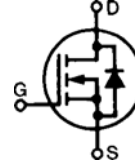
Q-Class

N-Channel Enhancement Mode
Avalanche Rated, Low Q_g , High dv/dt

IXFH/IXFT 24N50Q
IXFH/IXFT 26N50Q

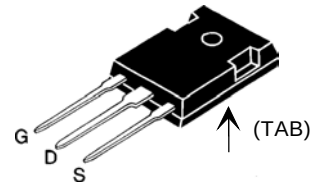
V_{DSS}	I_{D25}	$R_{DS(on)}$
500 V	24 A	0.23 Ω
500 V	26 A	0.20 Ω

$t_{rr} \leq 250$ ns

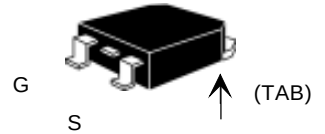


Symbol	Test Conditions	Maximum Ratings
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	500 V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1$ M Ω	500 V
V_{GS}	Continuous	± 20 V
V_{GSM}	Transient	± 30 V
I_{D25}	$T_C = 25^\circ\text{C}$	24N50Q 24 A 26N50Q 26 A
I_{DM}	$T_C = 25^\circ\text{C}$, Note 1	24N50Q 96 A 26N50Q 104 A
I_{AR}	$T_C = 25^\circ\text{C}$	24N50Q 24 A 26N50Q 26 A
E_{AR}	$T_C = 25^\circ\text{C}$	30 mJ
E_{AS}	$T_C = 25^\circ\text{C}$	1.5 J
dv/dt	$I_S \leq I_{DM}$, $di/dt \leq 100$ A/ μs , $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ\text{C}$, $R_G = 2$ Ω	5 V/ns
P_D	$T_C = 25^\circ\text{C}$	300 W
T_J		-55 ... +150 $^\circ\text{C}$
T_{JM}		150 $^\circ\text{C}$
T_{stg}		-55 ... +150 $^\circ\text{C}$
T_L	1.6 mm (0.063 in) from case for 10 s	300 $^\circ\text{C}$
M_d	Mounting torque	1.13/10 Nm/lb.in.
Weight	TO-247 TO-268	6 g 4 g

TO-247 AD (IXFH)



TO-268 (D3) (IXFT) Case Style



G = Gate, D = Drain,
S = Source, TAB = Drain

Features

- IXYS advanced low Q_g process
- International standard packages
- Low $R_{DS(on)}$
- Unclamped Inductive Switching (UIS) rated
- Fast switching
- Molding epoxies meet UL 94 V-0 flammability classification

Advantages

- Easy to mount
- Space savings
- High power density

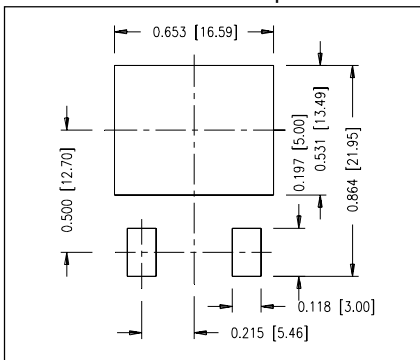
Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)
		min. typ. max.
V_{DSS}	$V_{GS} = 0$ V, $I_D = 250$ μA	500 V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 4$ mA	2.5 4.5 V
I_{GSS}	$V_{GS} = \pm 20$ V _{DC} , $V_{DS} = 0$	± 100 nA
I_{DSS}	$V_{DS} = V_{DSS}$, $V_{GS} = 0$ V $T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$	25 μA 1 mA
$R_{DS(on)}$	$V_{GS} = 10$ V, $I_D = 0.5 I_{D25}$ Note 2	24N50Q 0.23 Ω 26N50Q 0.20 Ω

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
g_{fs}	$V_{DS} = 10\text{ V}; I_D = 0.5 \cdot I_{D25}$, Note 2	14	24	S
C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		3900	pF
C_{oss}			500	pF
C_{rss}			130	pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ $R_G = 2\ \Omega$ (External),		28	ns
t_r			30	ns
$t_{d(off)}$			55	ns
t_f			16	ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$		95	nC
Q_{gs}			27	nC
Q_{gd}			40	nC
R_{thJC}	(TO-247)			0.42 K/W
R_{thCK}			0.25	K/W

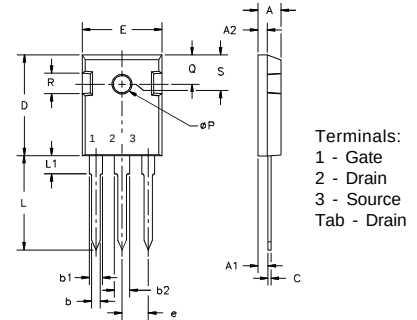
Source-Drain Diode		Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
Symbol	Test Conditions	min.	typ.	max.
I_S	$V_{GS} = 0\text{ V}$	24N50Q 26N50Q		24 A 26 A
I_{SM}	Repetitive; Note1	24N50Q 26N50Q		96 A 104 A
V_{SD}	$I_F = I_S, V_{GS} = 0\text{ V},$ Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$			1.3 V
t_{rr}	$I_F = I_S, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$		0.85	250 ns
Q_{RM}				μC
I_{RM}			8	A

Note 1. Pulse width limited by T_{JM}
2. Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$

Min Recommended Footprint



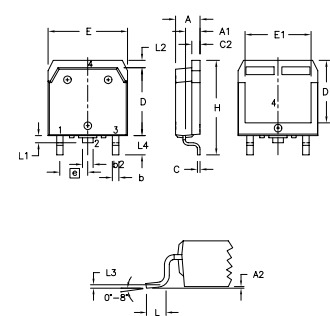
TO-247 AD Outline



Terminals:
1 - Gate
2 - Drain
3 - Source
Tab - Drain

Dim.	Millimeter Min. Max.	Inches Min. Max.
A	4.7 5.3	.185 .209
A ₁	2.2 2.54	.087 .102
A ₂	2.2 2.6	.059 .098
b	1.0 1.4	.040 .055
b ₁	1.65 2.13	.065 .084
b ₂	2.87 3.12	.113 .123
C	.4 .8	.016 .031
D	20.80 21.46	.819 .845
E	15.75 16.26	.610 .640
e	5.20 5.72	0.205 0.225
L	19.81 20.32	.780 .800
L1	4.50	.177
ØP	3.55 3.65	.140 .144
Q	5.89 6.40	0.232 0.252
R	4.32 5.49	.170 .216
S	6.15 BSC	.242 BSC

TO-268 Outline



Dim.	Millimeter Min. Max.	Inches Min. Max.
A	4.9 5.1	.193 .201
A ₁	2.7 2.9	.106 .114
A ₂	.02 .25	.001 .010
b	1.15 1.45	.045 .057
b ₂	1.9 2.1	.075 .083
C	.4 .65	.016 .026
D	13.80 14.00	.543 .551
E	15.85 16.05	.624 .632
E ₁	13.3 13.6	.524 .535
e	5.45 BSC	.215 BSC
H	18.70 19.10	.736 .752
L	2.40 2.70	.094 .106
L1	1.20 1.40	.047 .055
L2	1.00 1.15	.039 .045
L3	0.25 BSC	.010 BSC
L4	3.80 4.10	.150 .161

IXYS reserves the right to change limits, test conditions, and dimensions.

IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents:

4,835,592	4,881,106	5,017,508	5,049,961	5,187,117	5,486,715	6,306,728B1
4,850,072	4,931,844	5,034,796	5,063,307	5,237,481	5,381,025	

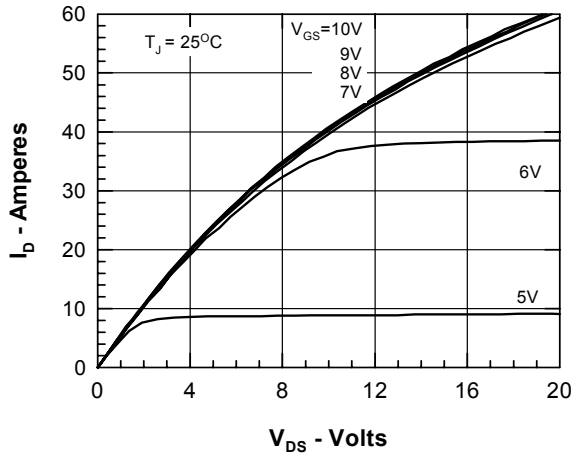


Fig.1 Output Characteristics @ $T_J = 25^\circ\text{C}$

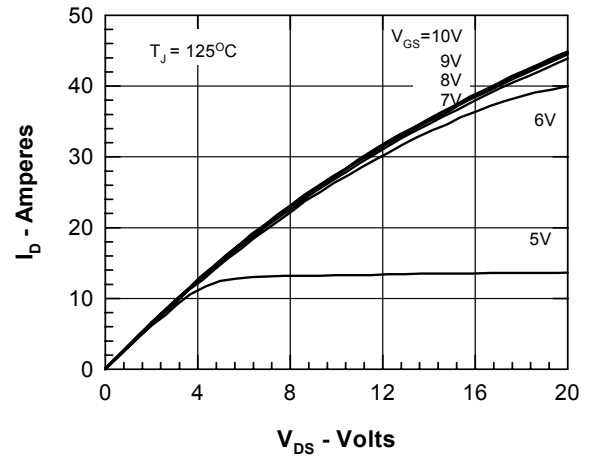


Fig.2 Output Characteristics @ $T_J = 125^\circ\text{C}$

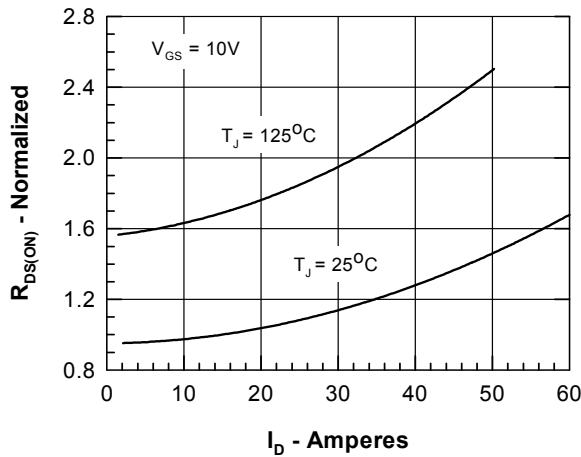


Fig.3 $R_{DS(on)}$ vs. Drain Current

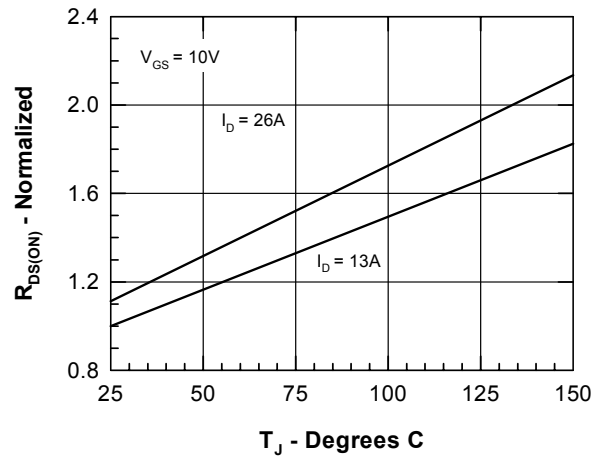


Fig.4 Temperature Dependence of Drain to Source Resistance

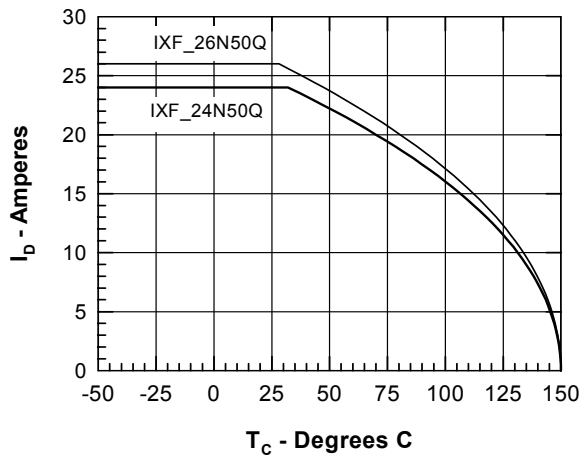


Fig.5 Drain Current vs. Case Temperature

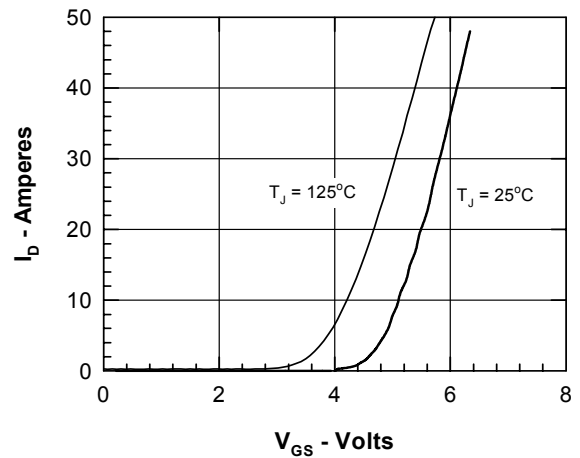


Fig.6 Drain Current vs Gate Source Voltage

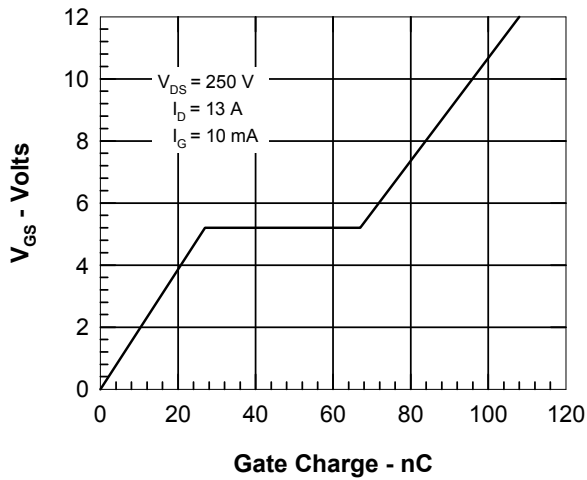


Fig.7 Gate Charge Characteristic Curve

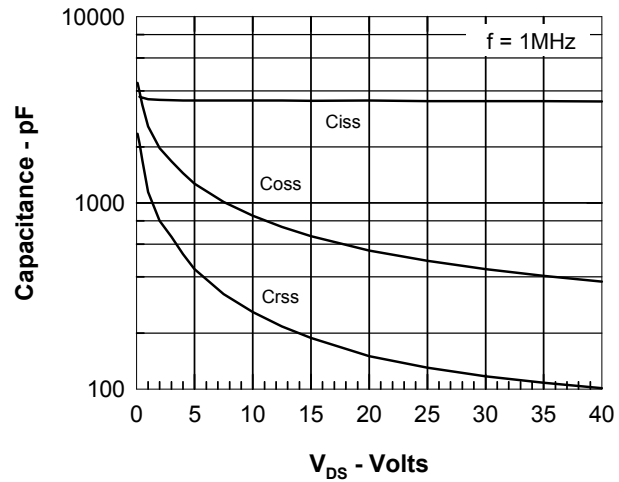


Fig.8 Capacitance Curves

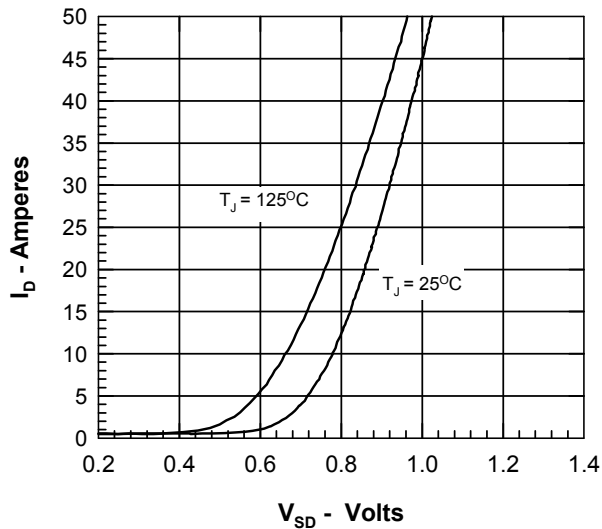


Fig.9 Drain Current vs Drain to Source Voltage

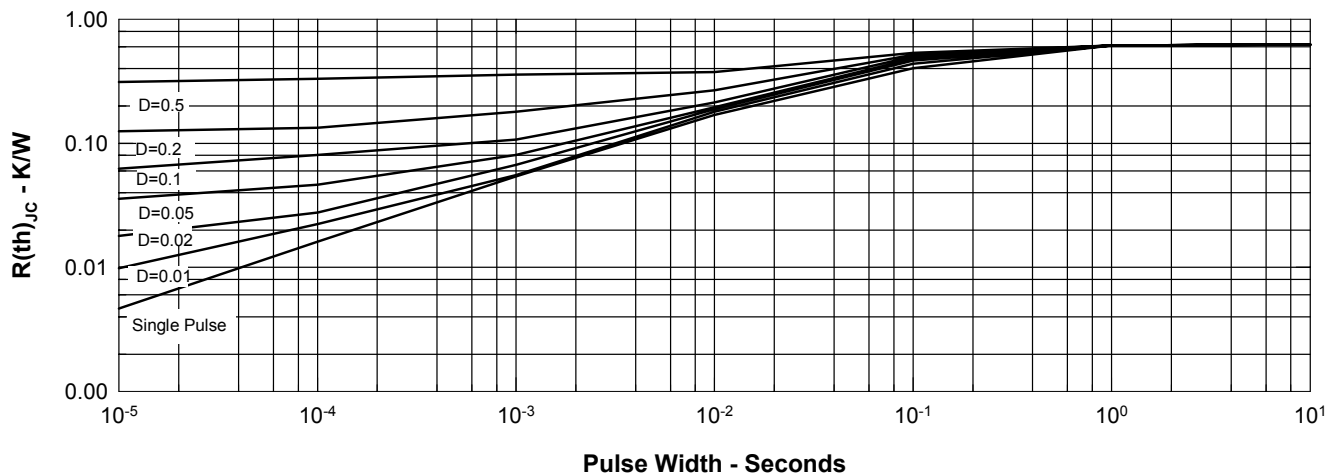


Fig.10 Transient Thermal Impedance

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